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THE MOUTH & TEETH IN HEALTH & DISEASE

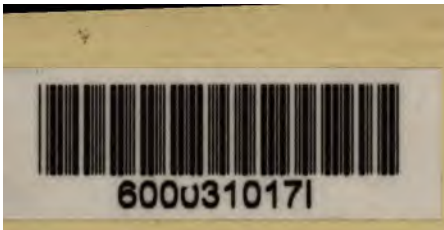
BY

J. MORLEY DENNIS, F.L.S.

DENTAL SURGEON

TO THE

GRIMSBY & DISTRICT HOSPITAL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THE

MOUTH AND TEETH

IN

HEALTH AND DISEASE.

BY

J. MORLEY DENNIS, F.L.S.,

MEMBER OF THE ODONTO-CHIRURGICAL SOCIETY;

DENTAL SURGEON TO THE GRIMSBY AND DISTRICT HOSPITAL.

WITH ILLUSTRATIONS.

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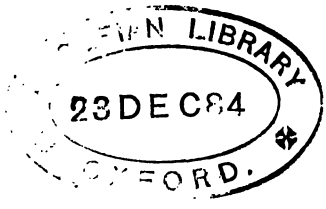

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PREFACE.

In placing these few pages before the public, the Author has attempted to supply what has appeared to him an existing want. He has long observed the very limited knowledge possessed by the public concerning the teeth, and has endeavoured to give in as clear and concise a manner as possible, sufficient information to enable them to judge when to consult the dental practitioner. In order to encompass this, prominence has been given to the consideration of affections resulting from neglected or diseased conditions of the teeth. The chapter on anæsthetics, the Author hopes, will be found to contain matters of general interest as well as information: while deformities and irregularities of the mouth and teeth have received some attention. The influence of the food on the teeth is discussed in the chapter on the care of children's teeth: a subject which may be regarded as of importance, inasmuch as it concerns in some measure the condition of the teeth of future generations. The attention of parents is especially directed to this chapter. The concluding chapter is devoted to the hygiene of the mouth, and contains some remarks

on dentifrices. The illustrations will convey to the mind of the reader matters difficult of explanation merely by description. In all cases, where necessary, the Author has brought forward quotations from some of the most eminent authorities in support of his statements.

In conclusion, he desires to express his hearty thanks to those gentlemen to whom he is indebted for important matter, including, among others, the following: Sir Edwin Saunders, F.R.C.S.; Mr. Coleman, F.R.C.S.; Mr. John Tomes, F.R.S.; Dr. B. W. Richardson, F.R.S.; Dr. Lauder Brunton, F.R.S.; Dr. White; Mr. O. Coles; Dr. Woakes; Dr. Sexton, New York; Dr. Galezowski, Paris; as well as valuable information elicited in the discussions of the learned societies.

45, Victoria Street, Grimsby,
October 1*st*, 1884.

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Chapter I.

DENTISTRY A BRANCH OF THE SCIENCE OF MEDICINE.

IT is well known that it has long been found convenient to recognise two great divisions of the healing art—medicine and surgery. These two primary divisions have existed many years, but more recently, in consequence of the rapid and brilliant advances in the science of medicine, and the consequent enlargement of our knowledge, it has been found impossible for the human mind to grasp the details necessary to become proficient in all branches; hence there arose a demand for specialism or the splitting up of medical and surgical practice into departments or specialties, which may be regarded as the legitimate outcome of the scientific growth and advanced civilization of the age. Thus it is customary in the Metropolis and other large centres, for one class of practitioners to make a special study of the eye; these are called Ophthalmic Surgeons: another section take the ear and its diseases, and are called Aural Surgeons, while others devote themselves to the administration of anæsthetics. These all undergo a training

as general practitioners, and make themselves acquainted with the structure and diseases of the whole body previous to entering upon the special study of the organ which they propose to treat, in order that they may become intimately acquainted with the intricate connections of that organ with other parts of the body, and the influence of morbid conditions of the general system on the organ in question; they then master the minute details of the department or specialty they have chosen, and by thus placing limits to their intellectual horizon, and putting their whole energy into one particular channel, together with the fact that continued practice in one class of cases enables them to attain more excellent results, they consequently acquire a proficiency which would otherwise have been impossible. Other specialties exist besides those we have named, but to which, with one exception, it is unnecessary to refer, as the foregoing examples are sufficient for purposes of illustration, and that is the specialty of Dental Surgery, which may be regarded as the most useful of all branches of surgery; for while a portion of mankind require the services of the Ophthalmic or the Aural Surgeon, all, almost without exception, require sooner or later the services of the Dental Surgeon.

It has always been maintained, that the specialty of which we speak, should in its highest and most extended view, be looked upon as a

branch of Surgery, for no practitioner can do full justice to those who come under his care, unless he possesses a knowledge of the principles of medicine and surgery. These views are confirmed by a distinguished surgeon, the Senior Surgeon to St. Bartholomew's Hospital, who in an address given by him some time ago on the subject of Dental Education, begs his hearers "To thoroughly realise the fact that the teeth are parts of the living body and hold important relations to various other parts; that they are not isolated structures in their diseases and morbid actions," and "that, in a word, although they have as every other part has, a special, they have not nevertheless, an isolated pathology, and this because, although they have, as every other part has, a special, they have not, nevertheless, an isolated anatomy and physiology."

This connection of dentistry with medicine is now becoming more and more recognised and appreciated, and for many years the leading Dental Practitioners in London, have deemed it necessary to acquire a knowledge of medical science as a foundation for their special studies; this, with some notable exceptions, has *not* been the case in the provinces, and may be accounted for by the fact, that the population in those parts have but imperfectly understood the relations of the one to the other, and that consequently there has not been that demand which the advancement of the

present age is causing to be felt, nevertheless we cannot shut our eyes to the fact, that the treatment of the various pathological conditions of the sensitive organs of which we are speaking, together with their intimate relations through the nervous system with the brain, the eye, and the ear, which may be seen by a glance at the illustration on page 5, to say nothing of other organs more remote but equally connected through the sympathetic system, requires something more than rule-of-thumb-practice.

A man whose occupation consists in preparing cavities in the teeth, stopping them, scaling, &c., no matter how well these operations may be performed mechanically, if he is ignorant of the cause of dental diseases, and the medical science essential to their proper treatment, he is a mechanic, as a large proportion are, and nothing more. If on the other hand he is a Scientist, is conversant with the diseases he is called upon to treat, and the relation they bear to associate parts in the manifold reflex actions of the teeth upon other portions of the body, and the action of remote organs upon the teeth and their appendages; and if he brings the same intelligence to bear in the treatment of dental diseases that the Ophthalmic Surgeon brings to bear upon the treatment of the eye, or the Aural Surgeon upon the treatment of the ear, then and only then, he is a special practitioner in medicine, and truly a

Surgeon Dentist or Dental *Surgeon*. It is a great error to think that even the lesser operations undertaken by the dental practitioner are by any means simple. They have to be performed under considerable difficulties. Light and perfect free-

Distribution of the Fifth Nerve.

dom from moisture are necessities, both being difficult to obtain, whilst manipulations of the most delicate character have to be undertaken in very small cavities, placed again within an area—the mouth—itself of no great dimensions. In the

operation of extraction of the teeth some difficulties present themselves, these may depend on the amount of adhesion between the tooth and the jaw, the divergence of its roots, or an exostosed condition of their extremities. Other operations on the teeth are complicated and impeded in no inconsiderable proportion of cases by the sensitive condition of the structures to be operated upon, rendering the proceedings alike irksome to both operator and patient, and demanding on the part of the operator a kind manner, inexhaustible patience and dexterous manipulation, more especially with delicately-nurtured and sensitively-organised individuals. It is a well-known fact that no physical ailment obtains less sympathy, and yet there is none more intolerable while it lasts, or is in its effects more prostrating and intellectually more absolutely paralysing than toothache, the origin of which, in some cases, is most difficult to discover, as it often happens that the pain is felt at a considerable distance from the seat of the mischief, and is transmitted or reflected along other nerve branches.

Having thus explained, with sufficient clearness it is hoped, the connection of the specialty of dentistry with the science of medicine, finally decided by Parliament in the Dental Act of 1878, which placed it under the control of the General Medical Council, we will proceed to consider the different methods of carrying on the practice of dentistry.

Dental practitioners generally may be divided into two classes—advertisers and non-advertisers. The former, and the means they adopt to gain publicity, are too well known to require comment. The latter prefer to become known by the success of their operations, rather than by any vaunted advertisement of their own, conducting their practices on the same principles and in the same manner as is customary with medical men, and the very fact that the Colleges of Surgeons now require candidates before receiving their diploma in Dental Surgery, to sign a declaration to the effect that they will refrain from employing advertising or any other unbecoming modes of attracting patients, shows very plainly the opinion of the authorities on this question.

The Author considers it a duty, not only to himself and to other members of the dental profession who abstain from making use of methods which are regarded as derogatory to the best interests of any profession, but also to the general public, that he should explain the grounds on which these practices are regarded as objectionable. Each profession as it becomes more and more organised, and takes a higher and higher place in social standing, cultivates a corporate conscience, the strictness and delicacy of which will be found in direct ratio to the general esteem in which the profession is held. In each of the old-established professions, the more highly cultivated minds

shrink from the merest suspicion of advertising. It has the injurious effect of producing unwholesome competition rather than generous emulation, and is therefore in itself a source of no good, while its too frequent effect is to attract that attention which an inspection of merit or excellence would have failed to secure. We must, however, admit the thoroughly legitimate nature of advertising in matters of trade or business, provided always that the advertisements be constructed on sound ethical principles, of which honesty and truth are two fairly good representatives. But notwithstanding that these practices of which I have spoken are carried on principally by those who can lay little or no claim to even a knowledge of the ordinary rules and obligations of professional life, there can be no doubt that the system of professional advertising is highly reprehensible.

Chapter II.

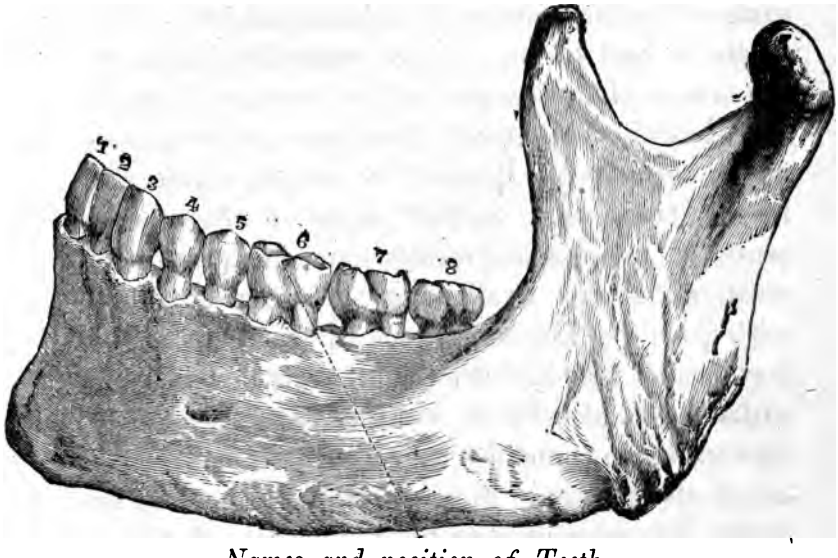
THE IMPORTANCE OF THE MOUTH AND TEETH IN HEALTH.

The mouth is the mirror of the face, and is not only the most expressive and characteristic, but also the most important of all the features. In it may be observed the reflection of the inward emotions. It is the organ of speech and language, by it we instruct as well as command, and add sweet melody to the pleasures of life. It forms undoubtedly, with the organs it contains, one of the most beautiful pieces of mechanism so lavishly bestowed by nature on the human frame, and displays the wisdom and beneficence of the Creator, who created our bodies with a combination of multitudinous parts, acting in sympathetic unison. No other portion of the human organism is of such complex structure, and no other has such diversified functions to perform. The importance of the preservation of the health of the mouth must be evident, and should scarcely require enforcement. The general system depends upon the teeth as the teeth depend upon the general system, perfect teeth and a healthy mouth being

absolutely necessary for proper nutrition, which is the first principle of health and strength. Disease of the body involves an unhealthy condition of the mouth, and is manifested by perceptible changes in the appearance of the tongue, lips, and gums, therefore it is only reasonable to infer, that an unhealthy condition of the mouth is prejudicial to the general health of the organism. In proof of this statement, it is only necessary to quote the late celebrated Professor Liston, who in the second edition of his "Elements of Surgery," says, "From the presence of carious teeth, or decayed portions of teeth, many evils both local and general ensue, besides inflammation and abscess. They are frequently the cause—and the sole cause—of violent and continued headaches; of glandular swellings in the neck, terminating in, or combined with abscess; of inflammation and enlargement of the tonsils, either chronic or acute; of ulcerations of the tongue or lips, often assuming a malignant action from continued irritation; of painful feelings in the face, tic doloureux, pains in the tongue, jaws, &c.; of disordered stomach from affection of the nerves, or from imperfect mastication; and of continued constitutional irritation, which may give rise to serious diseases." I may also add that protracted derangements of the sight and hearing not infrequently have their unsuspected origin in the mouth. Moreover the breath if made offensive by a diseased state of the mouth or teeth, cannot

be wholesome when inhaled into the lungs, and brought in contact with those delicate structures, the air-cells ; nor can it exercise the best influence on the blood, which depends in a great measure for its quality upon the purity of the air supplied to the lungs, while it is equally undesirable to transmit offensive matters into the stomach, as saliva or food polluted by noxious secretions.

The most important use of our teeth is mastication, for it is only in the perfect enjoyment of this blessing, that our food can be properly digested,



Names and position of Teeth.

1 Central Incisor.	4 & 5 Bicuspids.
2 Lateral Incisor.	6 & 7 Molars.
3 Canine.	8 Wisdom.

and that we derive the full benefit from its nutriment. Digestion commences in the mouth, yet it is

sometimes difficult to convince people that sound molar teeth are necessary for masticating their food. Most perfect is the arrangement of the different parts of this complicated apparatus, for bruising and mixing our food with the saliva: each suited to the various stages of preparation, through which the food passes before entering the stomach. The sharp edges of the incisors * or front teeth are especially adapted for cutting, the canines or eye teeth, as they are generally called, for tearing, while the bicuspids and molars with their broad surfaces are for grinding or pulping the food. The palate or roof of the mouth materially assists in the articulation of sound, and in the act of swallowing, while that unruly member—the tongue—which occupies the floor of the mouth, within the lower dental arch, is the organ of the special sense of taste, and presides over the process of mastication and swallowing; placing the food with the aid of the cheeks and lips in reach of the teeth, and keeping it within their masticating surfaces: it also by its sense of touch recognises its consistency, and by its sense of taste informs us of its quality. Food is more or less easily digested, in proportion as it has undergone thorough disintegration, for while the process through which it passes in the mouth is chiefly mechanical, that of the stomach is principally chemical. It will

* For explanation of names and position of teeth, see illustration on page 11.

therefore be easily understood that the more completely the food is divided in the mouth, the larger will be the surface exposed to the action of the digestive fluids of the stomach, and the more speedily will it be dissolved if first ground to a pulp. Food passed into the stomach in an improper condition, may remain for a considerable time undissolved, disturbing its functions, and undergoing fermentative changes; and if not expelled by vomiting may cause disturbance throughout the whole length of the alimentary canal. It will be seen therefore, that if the teeth are defective or lost, it is impossible that the food can be properly masticated, and as the stomach cannot do the work of the teeth, indigestion is the consequence. Unfortunately however, the mischief does not end here, but in many cases, in consequence of the food passing through the system, without imparting that nourishment which is so necessary to health and strength, the form and features become wasted and the nervous system prostrated, while the languishing body proclaims the fact that nature is taking her revenge. It will be observed, that defective teeth are included as one of the causes of imperfect mastication; the reason for so doing may here be explained. When a tooth exists on one side of the mouth which is sensitive or painful on pressure, we are inclined to avoid using it, which always means avoiding the use of the antagonistic or

opposing tooth, and sometimes prevents the use of all the teeth on that side of the mouth. Many otherwise intelligent people are very deficient in a proper comprehension of this subject, and matters of far less importance to individual comfort, and beyond all question of smaller moment to health and life, receive infinitely more care and attention. The fact that there has been a progressive deterioration in the quality of the teeth of mankind, through successive generations, is abundant reason to awaken a general interest in the subject. There is no doubt that much of the suffering which arises from the premature decay of the teeth, might be avoided if proper attention were bestowed on them immediately decay makes its appearance, and if that decay were arrested by the removal of the softened and diseased portions, and the cavity disinfected and properly stopped. It is a great mistake to allow a decayed tooth to remain without interference, because the adjoining teeth are almost sure to suffer; and to those who are in the habit of filling their own teeth with gutta percha, one word of warning may be useful—they little think that decay is still going on under the gutta percha, for the very reason that the diseased portions have not been removed and the cavity disinfected.

The wedging of gutta percha between teeth is also very liable to displace them, and the author has now a case under his treatment, in which

the two central incisors of the upper jaw are pointing towards the left side of the mouth, which will require some time to regulate, and which was caused in this manner. The natural teeth are incomparably better than any artificial substitutes, therefore every effort should be made for their preservation and retention in the mouth, as they tend to support each other in position, and by due attention to the teeth, the gums also are more likely to preserve a healthy tone.

Healthy gums adhere firmly to the necks of the teeth, have a pale, clear, hardy appearance, and do not easily bleed; while on the contrary, when in an unhealthy condition, the gums recede from the teeth, and bleed readily.

The removal by the process of scaling, of any tartar or abnormal deposit from the teeth, is exceedingly advantageous to the health of the gums; and it is always well to remember, especially with regard to the stopping of teeth, that the sooner the operation is performed, the less pain is caused; as the nearer decay approaches the pulp or nerve of the tooth, the more painful is its removal.

Chapter III.

DECAY: ITS CAUSE AND REMEDY.

Previous to considering the decay of the teeth, it will materially assist us to know something of their structure, and I therefore propose to explain in language as comprehensible as possible their form and composition. That portion of a tooth which is exposed or above the gum is called the *crown;* that which is held in the socket and is below the gum is known as the *root* or *fang*, while the narrow part between the crown and root is called the *neck.* It may be regarded by some, as useless to define anything so simple as this, but as we proceed further we shall see, that the fact of having a definite expression for the various parts of the organ in question, will enable us in the future to refer to any particular part in fewer words and with greater accuracy, and moreover we must remember, that in commencing the consideration of any subject, however simple, sound and practical outlines are essential to its proper comprehension. A tooth is composed of enamel, cementum, dentine, and dental pulp. The outer covering of the crown is the enamel, which is the

hardest tissue in the body. It is distributed more thickly on the cutting edges and masticating surfaces than on any other part; and gradually becomes thinner towards the neck, at which point it is met by the cementum. It is generally regarded as possessing little or no sensibility, and is almost entirely soluble in acids, which will account for their destructive influence on the teeth, and we can never be too careful in avoiding their use in the mouth, but concerning which I propose saying a few words when we consider the subject of dentifrices. The covering of the roots of the teeth is termed cementum, and is intermediate in hardness between dentine and bone. The bulk of the tooth is composed of dentine, which is sometimes but erroneously called tooth-bone. Under the microscope, it is found to consist of innumerable tubes of a diameter of about $\frac{1}{4500}$ of an inch, and is highly sensitive to variations of temperature, as also to contact with foreign substances. This sensitive condition is principally due to its connection with the pulp or nerve by means of minute fibrils. When any defect exists in the outer covering or enamel, or when we apply an excavator for the purpose of clearing away diseased portions of the dentine, severe pain is sometimes felt, which is occasionally ascribed to the nerve, and patients have been known to complain when sensitive dentine was being excavated, that the nerve had been touched

with the instrument, when really the nerve or pulp was not at all exposed, and it was therefore impossible to touch it, the pain arising from touching the sensitive dentine, and the sensation from which being conveyed to the nerve. The tooth pulp, or what is commonly but incorrectly called the nerve, a term which I have used in order to be better understood by general readers, is contained in the cavity in the centre of the tooth, and is the uncalcified portion of the original germ. It is composed of blood-vessels, nerves and connective tissue, and supplies nourishment to the tooth, and its very existence combined with its connection with the system of nerves, proves that the teeth depend upon the general system as the general system depends upon the teeth. When the general system is well nourished, then the teeth are generally speaking well nourished also, and when the teeth are well nourished they by their proper use aid in the nourishment of the general system.

It will thus be seen that the pulp is surrounded by solid dentine, with the exception of a small opening at the extremity of the root, and through which the pulp is connected with the system of nerves. As it was previously mentioned that the pulp is composed of blood-vessels and nerves, I may here state that from the nerves contained in its structure, pass out on every side minute fibrils, which penetrate the dentine and account for its sensitive character.

The death of the pulp involves a loss of vitality in the dentine and enamel which depend upon it for their nutrition, and therefore should be avoided if possible, as disintegration of the tooth substance often results. But notwithstanding the death of the pulp and its consequences, it is possible for the tooth to retain a semi-vitality by means of its root membrane (the pericementum), from which minute nerves and blood-vessels pass into the cementum, or outer covering of the root. Having thus made ourselves acquainted with the structure of a tooth, we will pass on to the consideration of decay.

Dental decay or caries attacks the enamel and the dentine, the latter of which constitutes the bulk of the tooth, the cementum being seldom affected by it. It, like most dental diseases has two sources, a simple local source, and a constitutional source. The local causes of decay are principally the chemical action following the use of acids in the mouth, in the form of either food or medicine, the effects of improper toothpowders, the existence of abnormal deposits on the teeth, which cause irritation of the gums, and last, but by far the most frequent cause is the fermentation and decomposition of food around the teeth, especially about the margins of the gums, which fermentation generates acids and dissolves out the earthy matters of the tooth substance. The constitutional sources of decay are generally imperfect structure, defective nutrition, or irregularity

of position. Imperfect structure may arise from inherent conditions of the original formation of the teeth, existing in some cases before birth, and causing a predisposition to decay; while defective nutrition produces similar results by withholding that nourishment which is so essential to their existence in a sound condition. The manner in which irregularity of position becomes a source of decay is the amount of pressure which is so frequently present in teeth overlapping each other, and the increased difficulty in keeping them clean by reason of their irregular position. The dense condition of the enamel prevents decay going on very rapidly, but when it reaches the dentine it progresses more quickly until the pulp is reached, which is accomplished sometimes without much pain, and when once a cavity is formed, the destructive elements are retained in constant contact with the tooth structure, hastening the progress of the disease. In some cases the decay proceeds insidiously and slowly, and in others with equal rapidity, exhibiting different features in different individuals, and varying in colour from almost white to dark brown. The means adopted for the treatment of this decay is in most cases capable not only of arresting its progress, but also of restoring the tooth to its original utility; however, in speaking of this, as of all other dental operations, we must remember that there are exceptions to every rule, and as the medical man

does not cure *every* case that comes under his care, so also the dentist, if he is honest, will confess that there are some cases, *although a very small proportion*, which are exceptional, and which do not reach his expectations.

In commencing the preparation of a carious tooth for stopping, which is the only means of properly restoring it, we first scoop out or excavate all the softened and discoloured portions, and then form the cavity into a suitable shape for retaining the filling. This is managed by very fine instruments of a variety of shapes, and sometimes occupies a considerable time, while in other cases the cavity being naturally adapted for retaining the filling, and the dentine easily removed, we are enabled to proceed rapidly. We occasionally find it difficult to obtain a view of the interior of the cavity, especially when situated in the back of the mouth, and are then obliged to make use of small mirrors. Assuming that the excavation is completed, we proceed to disinfect and treat the walls or sides of the pit or cavity with various antiseptic preparations, with a view of preventing a recurrence of decay; the cavity is then ready for the insertion of the stopping, which is accomplished in various ways according to the material used, but it is sufficient to say that a short time after its insertion the tooth is ready for duty, and generally remains useful for years. And now we come to consider those teeth which are hopeless, and for

which there is no remedy but extraction, an operation which most people approach with apprehension, and which a patient of mine (an officer, now on active service) described as more formidable to him than a cannon's mouth, but when performed with a skilful hand, and with an instrument suitably formed may be easily managed, and in most cases without the use of nitrous oxide, or any anæsthetic. It is, however, necessary that the operator possess a knowledge of the structure of the surrounding parts, in order to know in which direction to exercise his force in ejecting the offending member with as little injury as possible to them. On the whole, however, the operation requires considerable skill, and in some cases complications arise which are entirely unforeseen, and for which the operator should be prepared. Among these are exostosis, or any osseous growth at the extremity of the root, which may prevent its being easily dislodged, as well as many other difficulties, to which it is unnecessary to refer.

Chapter IV.

DISEASES ATTENDING OR RESULTING FROM DENTAL DECAY.

It is well known that morbid conditions of the teeth are capable of exciting considerable mischief in other parts of the organism, through the system of nerves; and although the part they play in connection with facial neuralgia has long been recognised, yet there are other influences which have been recently brought to light, and which should be more widely known. But before proceeding to examine the facts which I shall bring forward concerning them, it will be well for one moment to take a glance at our old enemy, neuralgia, merely as a matter of recognition, and in doing so, I think I cannot describe a better or a more practical rule of recognising its existence, in contradistinction to that of odontalgia or toothache, than by pointing to the intermittent character of the pain. At the same I would mention that, even when pain exists which is really and truly neuralgia, that pain, although intermittent, may be, and is caused in many instances by the irritation of bad teeth; consequently the first step in such cases to gain

any permanent relief, is to have the mouth thoroughly examined, and any existing irritation removed. The other influences of which I spoke, and which I said had not received the attention their importance demanded, are the influence of diseases of the teeth on the ear, and also on the eye. This has been admitted by most eminent authorities, including Dr. Woakes, of London, and Dr. Sexton, Surgeon to the New York Eye and Ear Infirmary, the latter gentleman stating that in 1,500 cases of ear disease of which he had kept record, about *one-third* owed their origin or continuance, in a greater or less degree, to diseases of the teeth.

In his remarks on the teeth generally, Dr. Sexton says, "It was not until the beginning of this century, when John Hunter, Fox, and others, laid the foundation of their true pathology, that the teeth were treated on a scientific basis. Within the present decade Wedl and others have brought the pathology of the teeth up to the standard of modern requirements. The apathy, which has always existed on the part of the profession regarding this subject, has left the treatment of diseases of the teeth in the hands of men who have occupied themselves almost exclusively with its mechanical department, and who, as a rule, have but little to do with the teeth in a medical aspect. It is greatly to be regretted that a field of such interest has been abandoned by the profession.

Many affections of the teeth lead to most grave and intractable diseases of the regions presided over by the sympathetic system, and these are often suffered to be long unattended before they are brought under appropriate management. Thus an ear, eye, or throat difficulty may become firmly seated, or a neuralgia, which renders life intolerable, may be established. When I look back at the operation for the removal of Meckel's ganglion, which I have twice witnessed, for the relief of facial neuralgia, it occurs to me that the most simple of remedies could have controlled that disease when it was first induced, as it probably was in these instances, by a carious tooth. The teeth are a prolific source of nervous diseases for sufficient reasons; their development and decay, their ill-usage by improper foods and drinks, the unhealthiness of the saliva, the lack of cleanliness, &c., are all sources of greater or less irritation. The mouth moreover being richly supplied with nerves and blood-vessels, which are distributed to to its extensive mucous membranes, is highly sensitive to all of these influences." These words written by such a consummate judge, may be regarded as worthy of our consideration, inasmuch as he *not* being connected with the practice of Dental, but of Aural Surgery, may reasonably be considered an impartial observer; while his observations on the influence of diseases of the teeth on the ear, are all the more weighty from the fact of

his having made a special study of that organ.

The eruption of the wisdom teeth very frequently produce serious affections of the ear, and if that organ be in a diseased condition when the eruption begins, the malady is aggravated; the difficulty usually experienced on the eruption of this tooth being caused principally by the density of the alveolus at the time of its eruption, which is considerably later in life than any other tooth, and which consequently resists penetration. Sometimes these teeth make their appearance very late in life, although the usual time of eruption is between the twentieth and thirtieth year. Dr. Abbott relates the case of a man under his own observation, whose two upper wisdom teeth appeared at sixty years of age; but this case is put entirely into the shade by one which came under the notice of Mr. Coleman, F.R.C.S., Professor of Dental Surgery and Pathology at St. Bartholomew's Hospital, and which that gentleman related in one of his lectures in that institution, the particulars of which I made note of at the time, and believe to be the most unique on record. This was the case of an eminent medical man who erupted a wisdom tooth at the age of eighty-six, which was considered most remarkable. Turning our attention to some of the causes of irritation, I may refer to hypertrophy of the teeth, exostosis, &c. These are of slow development, but give rise to painful neuralgias, and a case is reported in the

Quarterly Journal of Dental Science, 1857, where death ensued from this cause, the irritation of the exostosis exciting inflammation of the membranes of the brain. Mr. John Tomes, F.R.S., of the Middlesex Hospital, reports two cases of epilepsy arising from this cause. Dr. Abbott describes the case of a lady, aged sixty years, who suffered greatly from neuralgia for ten years, during which time she had two operations performed (division of dental nerve) without benefit. The removal of a tooth having an exostosed root gave entire relief. Much more might be said on this subject, and cases of deafness related from this cause, but we cannot have a stronger proof of the connection existing between the ear and the teeth, than the frequent cases of toothache and earache occurring simultaneously in young children, which has long been observed by both general and special writers. The dental irritation which is capable of causing ear disease, is equally capable of generating affections of the eye. Dr. Galezowski, M.D., Paris, regards this irritation as the fruitful cause of abscess of the cornea more or less grave, as well as numerous other diseases of the eye. In referring to the various morbid conditions of this organ brought about by a neglected condition of the mouth and teeth, this author says, "We clearly understand then, that to cure any malady of the cornea or iris, developed under the influence of irregular and painful dentition, it is not sufficient to attend to the local

affection of the eye only, but that it is necessary to endeavour to allay the dental irritation by taking out carious milk teeth, and by lancing the gums deeply on the parts where the teeth will pierce." Sirletti *(Le movement med.)* reports the case of an old man suddenly attacked with hemeralopia, without any previous enfeeblement of vision. On examination it was found that the patient had suffered severe pain in the upper canine teeth, from one of which the crown was gone. A fistulous cavity, with intra and extra-alveolar periostitis, was found at the root of each canine. These teeth having been extracted, the patient began to be able to distinguish light from darkness almost immediately, and by the end of six days his sight was completely restored.

Dr. Lauder Brunton, F.R.S., at a meeting of the Odontological Society, some time ago related a case in which dental irritation had the effect of producing peculiar cerebral symptoms. A farmer, aged twenty-two, with a strong family tendency to insanity, in May, 1875, suddenly took to riding madly about the country without his coat and waistcoat. From May until November he was exceedingly noisy, destructive, untidy, almost constantly excited, and if for a day or two he was exhausted, he was sullen, and more dangerous. In the middle of November he complained of very severe toothache, that caused him to be sleepless. He bore this for two or three days, after which

the stump was removed. There was suppuration at the root of the fang. From the time that the stump was extracted the patient steadily improved, and by the middle of December was quite well. This case is so extraordinary, that one would be inclined to hesitate before accepting the truth of the statement were it not for the acknowledged eminence of Dr. Lauder Brunton. From a review of these facts we can only be led to conclude that as relief was the result of the removal of the tooth, and the consequent evacuation of matter or pus, the disturbance in the brain was in some measure due to this irritation.

There are several morbid conditions of the gums, as well as alveolar abscess, and inflammation of the alveolar periostium, which may fairly be included among diseases attending or resulting from dental decay; but as a description of them would occupy considerable space, and be unattended by any proportionate benefit to the general reader, I shall omit them from this category.

Chapter V.

ANÆSTHETICS, GENERAL AND LOCAL.

I am inclined to believe that the subject of this chapter must be one of especial attraction to the non-professional reader. There is something peculiarly interesting in those remarkable achievements of modern science, whereby extraordinarily severe, and sometimes vitally necessary surgical operations, which for preceding generations were absolutely prohibited by the susceptibilities of humanity, have been brought into the sphere of practical possibility.

No doubt the knowledge, that the use of anæsthetics is not entirely devoid of danger, also considerably increases the curiosity with which they are usually regarded. This danger, which undoubtedly does exist, should not, however, deter even the most timorous from freely and fully taking advantage of the increased and greatly enhanced powers which anæsthetic agents place at the command of the dental practitioner.

For it should be borne in mind that the mysterious mode in which these agents operate has a tendency to make us easily overestimate the risk

which attends their use. As a matter of fact, the hazard incurred by the patient under nitrous oxide gas, when properly administered, is not greater than that run every day by thousands of people in every conceivable occupation. If I were asked, as I often have been by patients, if anæsthetics were *perfectly safe?* my answer would be, that even the use of nitrous oxide or laughing gas, the safest of all anæsthetics, and the one almost exclusively used in dental operations, *is attended by some risk*, but *not greater than that incurred in making a journey by rail.* A considerable amount of care is also necessary in the administration of any anæsthetic, more especially chloroform. I may here mention, that the duration of the anæsthesia produced by nitrous oxide, is in some cases insufficient to allow the operation to be properly completed. This occurs when it is necessary to remove several teeth, and it is customary in such cases to prolong and intensify the somniferous condition of the patient, by commencing the inhalation of ether after insensibility has been produced by nitrous oxide; or if inconvenient or undesirable to make use of the somewhat complicated apparatus employed for this combined anæsthetic, then chloroform is used.

It must not be forgotten that this priceless gift, this magic charm—by which what was hideous in the surgery of the past, or pre-anæsthetic period, has been robbed of its terror—had its origin in the specialty of Dental Surgery. The crucial experi-

ment which first demonstrated to the world the practicability of inducing at will temporary insensibility to pain, was the removal of a tooth, which simple as this operation may appear, is probably attended with as much pain while it lasts, as any of the more extensive operations in surgery. We cannot therefore overestimate the great gain to humanity, both to young and old, which has resulted from this discovery. This realistic translation of the magician's art, in its adaptation to the needs of suffering humanity, may be undervalued because of our familiarity with its use.

About the close of the last century, Sir Humphrey Davy instituted a number of experiments with nitrous oxide, which had been discovered by Priestley, in 1776, although its anæsthetic properties remained as yet unknown. He (Sir Humphrey) found that this gas relieved him from headache after a profound fit of intoxication, which he had purposely brought on by drinking a bottle of wine in eight minutes, in order to compare its effects with those of the intoxicating gas. He also found it lessened the pain of cutting a wisdom tooth, and concluded by suggesting that this gas might "probably be used with advantage during surgical operations." Notwithstanding the remarkable experiments of Davy, in which the value of nitrous oxide was fully demonstrated, no less than 44 years elapsed before it was brought into actual use, *and the honour of first acting on his suggestion is due to a dentist.*

On the 11th of December, 1844, Mr. Horace Wells, Surgeon Dentist, of Hartford, Connecticut, U.S., inhaled the gas, (to which his attention had been drawn by a lecture delivered by a Mr. Colton) while another dentist, Dr. Rigg, extracted one of his teeth without his feeling any pain. The new agent was then employed in thirteen or fourteen cases in Hartford, and was found useful even in larger operations, as Dr. Bigelow removed a female's breast on April 26th, 1848; the inhalation lasted six minutes, and was perfectly successful. Dr. Barnes once kept a patient ten minutes under its influence without any unpleasant symptoms; but after a time a case occurred, in which it failed to prevent pain during the extraction of a tooth, and that in the presence of Dr. Charles T. Jackson, Professor of Chemistry, and Dr. W. T. G. Morton, Surgeon Dentist, of Boston, U.S., which led them to believe that there was some uncertainty in its action, and was eventually the means of turning their attention to another agent (sulphuric ether) which had been supposed to resemble in its effects those of nitrous oxide, but had not, I believe, been used in any operation. Dr. Morton therefore administered sulphuric ether to a patient on the 30th of September, 1846, and extracted a tooth without pain. A dispute now arose between Dr. Jackson and Dr. Morton as to which of them had been the means of bringing its properties into notice; however, in the meantime, Dr. Boot, of

London, received information from Dr. Bigelow, of Boston, concerning the administration of this new anæsthetic (ether), and the result was, that Mr. Robinson, of Gower Street, extracted a tooth painlessly under its influence for a young lady at the house of Dr. Boot, on the 19th of December, 1846.

Professor (afterwards Sir James) Simpson, of Edinburgh, having ascertained its value, administered it in that city on the 19th of January, 1847, and with the best results. This success (with ether) led Professor Simpson to begin a series of experiments, with a view to discover a new agent possessing the same qualities as ether, but lacking one or two disadvantages it possessed; and accordingly one evening a party of medical gentlemen met to try experiments, and their proceedings would have seemed strange, if not foolish, to persons unacquainted with their object, had any such been present. On a table at which three of these gentlemen were seated, several bottles were placed, containing various liquids, and before each was a tumbler, into which a portion of the contents of one of the bottles was carefully poured. After placing each tumbler above a vessel containing warm water, the three gentlemen held their faces over in order to inhale or draw into the lungs through the mouth and nostrils any vapour arising from the liquid contained in the respective tumblers, while their friends watched the proceedings

with great interest. These experiments were tried on different liquids without any result, until at length one of the gentlemen selected from among the rest a bottle, the contents of which he poured into the three emptied tumblers, and he and his two friends repeated their curious performances, resulting this time in their falling insensible on the floor, but they soon recovered from the effects. They had, however, attained their object, and from that night dates the discovery of chloroform. It is scarcely necessary to enlarge on its value, and the amount of suffering which has been avoided since its introduction; but a review of the history of anæsthetics would never be complete without mentioning the name of James Young Simpson, who took the most prominent part in the experiments just related, and who afterwards was most energetic in introducing this new agent into general use. A short sketch of his life will possibly be appreciated by those, who, by reason of accident or disease, may any time have cause to take advantage of the results of his labours. He was born at Bathgate, in Linlithgowshire, in 1811, of parents, who although not rich, were nevertheless in a respectable position. What, however, his parents could not do for him in the way of education, was procured by other means, and he was enabled to enter the University of Edinburgh as a student of medicine. Many were the difficulties with which he had to contend, and when he had completed

his medical education, he was poor and unknown. Dr. Simpson found, like many other young professional men, that practice rarely comes speedily; and had it not been for his perseverance and industry, as well as his undoubted talent, he would probably have sunk, as thousands under similar circumstances have done, into listless indifference and greater obscurity. It often occurs that merit is totally unrecognized, and this was the case with Dr. Simpson, who in the early part of his professional life met with a severe disappointment in failing to secure the post of medical officer to a small country district. He, however, commenced practice as a physician in Edinburgh, and his fame extended at first slowly and gradually, but afterwards rapidly, until eventually he was regarded as one of the ablest physicians in the country. Patients crowded to consult him from all quarters of the globe, and medical men came from all parts, eager to see something of his practice, and to have the pleasure of conversing with one so celebrated, and who had not hesitated to endanger his life for the benefit of suffering humanity. Honours were showered upon him both at home and abroad, and these culminated in the bestowal of a Baronetcy. He died at the comparatively early age of fifty-nine, loved and respected by his colleagues, and a bright example for the emulation of future generations.

In addition to those *general* anæsthetics which may

be distinguished by the fact that they induce complete insensibility throughout the whole system, and of which some description has been given, there are those which are usually termed *local* anæsthetics, and which produce insensibility only in the part to which they are applied. These possess the advantage of perfect safety, and are very suitable for operations on the front teeth, more especially those of the upper jaw, the liability of the saliva to collect and interfere with their effect on the lower teeth, being an objection to their use for operations in that part of the mouth. They are, generally speaking, unsuitable for operations in the back of the mouth, although, even in that position they will considerably modify the pain. I have extracted front teeth under their influence without inflicting the least discomfort. They may therefore be regarded as peculiarly suitable for cases of this description.

Chapter VI.

DEFORMITIES AND PECULIARITIES.

Many parts of our system carry with them such hereditary resemblances, that the least observant cannot fail to notice them. These resemblances are not confined to mere form, but may be traced in a variety of ways. We may observe peculiarities of locomotion so distinct that the walk of the child is the counterpart of that of the parent. The teeth are no exception to this rule, as no class of organs bear more closely the family characteristics with regard to shape and position.

Deformities, as a rule, each possess their own peculiarities; and it is therefore useless to occupy much space in describing cases which really demand a consideration peculiar to themselves. The most important of this class being cleft palate.

Besides congenital deformities, or those which exist from birth, we have those which may be described as acquired, and which in the majority of cases are produced by mechanical means, such as the undue retention of the temporary teeth, which retards the eruption of the permanent ones, and results in their being displaced, and emerging from

the roof of the mouth, or the external surfaces of the gums, in the latter case sometimes wounding the cheek or lips.

The utility of the teeth is always more or less impaired by the existence of any irregularity which prevents proper mastication; it is also the cause of faulty pronunciation, and in many cases destroys the symmetry of the face. Parents cannot therefore be too careful in attending to the regulation of their children's teeth, by having temporary teeth—which may be suspected to impede the eruption of the permanent ones—extracted, before it is too late. Sometimes the upper front teeth close edge to edge against the lower, instead of closing *over* them, causing a rapid wearing away of the edges of both. The upper teeth in other instances close so far outside of the lower that they rest upon the lower lip: again we see cases in which the teeth of the lower jaw close in front of the upper teeth, while in others, the molars alone come in contact when the mouth is closed, leaving a space between the incisors or front teeth, but this latter is a deformity of rare occurrence.

The habit of sucking the thumb or fingers during childhood is the fruitful cause of deformities of the mouth; the steady pressure kept up tending to displace the teeth at a time when the surrounding parts have not acquired that dense condition they possess later in life. The illustration on page 40 represents the deformity arising from the habit of

sucking the thumb. The teeth of the lower jaw may be displaced in a similar manner, by the habit of sucking the first and second fingers, being gradually drawn out of position by the weight of the hand and arm. The fact that the irregularity thus produced causes disfiguration and discomforts which may remain through life, should be sufficient to induce parents to prevent their children acquiring these habits, or at all events to break them in their commencement.

One of the most important irregularities is caused

by the defective growth of the jaws during the development of the permanent teeth, giving rise to unsightly crowding. In directing our attention to this, it must be remembered that the development of the teeth is quite independent of that of the jaws; that the crowns of the permanent teeth are formed long before their eruption, and that even if the development of the jaws be retarded or defective, the development of the teeth is not at all modified; consequently we have large teeth erupted from an imperfectly formed jaw, which

must necessarily result in a crowded condition. It may seem strange that it is possible to displace organs which in the adult appear so firmly embedded in their bony sockets, but we must not forget, that previous to the eruption of the teeth their roots are not embraced so closely as they are after they have emerged through the gum; the socket having for a considerable time previous to the eruption, and during the development of the teeth, to contain the crown as well as the root, the former being, as we all know, much larger than the latter. In the course of time the crown emerges through the gum, leaving the root or roots to occupy the position it previously held, so that the tooth is surrounded by soft and yielding tissues, until after a time the bony growth extends and embraces the roots and necks of the teeth more closely.

We will now for one moment turn our attention to the most probable cause of arrested or imperfect growth of the jaws, which is admitted to exist more frequently in the present than in past generations.

In this age of progress, when the education of the people has been so extended and advanced as even to suggest the possibility of sacrificing their physical welfare for their educational proficiency, a subject which has been freely discussed during the past few months, and has received some attention in the House of Commons. At a time like

the present, when this subject is exercising the public mind, it is not difficult to assume, that by an undue stimulation of the brain and nervous system,—in other words, if more attention is paid to the manifestations of children's intelligence, than to their general growth—the development of the bones must be impaired, and any mental proficiency is attained at the expense of the rest of the organism. The first seven years of a child's life should be spent in building up its body by out-door exercise, plain and wholesome food, and refreshing repose; leaving the culture of its intellectual faculties until they, like the bones, have become properly developed, and we shall then have children whose mental and physical powers are not only more vigorous, but more permanent.

The deformities and irregularities from all causes are capable of proper treatment, and in many cases with great success; but as was mentioned in an earlier part of this chapter, they are so numerous, that without knowing all the circumstances of each individual case, it is impossible to frame any general rule for their treatment.

Chapter VII.

ARTIFICIAL TEETH.

It is difficult to over-estimate the value of artificial teeth to those who have been unfortunate enough to lose the teeth provided by nature, as they promote comfort, health, more perfect pronunciation, and increased personal appearance. The most important advantage to be obtained by their use is undoubtedly *mastication*, for without this it is impossible for us to properly digest our food, or derive the full benefit from its nutriment. It will therefore be easily understood, that good teeth, either natural or artificial, are not only necessary to the enjoyment of good health, but are assuredly the best means of restoring and maintaining the health we have.

They are especially of the greatest use as an aid to distinct pronunciation, after they have been in the mouth a few days, and the tongue has become accustomed to them.

The wonderful improvement in the personal appearance of those who make use of artificial teeth, has led the public to entertain an idea that this is their chief advantage. It is, however,

entirely erroneous to suppose that their influence in promoting perfect digestion, and consequently improvement in health, is at all secondary to their influence on the appearance, although the change is certainly so marked that it can only be fully appreciated when the same face is seen *with* and *without* them.

In addition to using our best efforts to secure comfort, usefulness, and durability in the adaptation of artificial teeth, there is another question of considerable importance, and to which I invariably pay particular attention. It is the question of correlation of the substitutes with the general physical characteristics of the patient, and may be described as the æsthetics of substitution. It embraces a consideration of age, temperament, facial contour, &c., by which we are enabled to adapt the teeth to every variety of facial expression, and thus to add to utility the charm of beauty.

Notwithstanding the fact that this question has been neglected in the past by many dentists in England, yet the success which has attended its recognition in Paris, America, and other places, justifies the supposition that it will receive much attention in the future. Some people are exceedingly anxious that their teeth shall be of a pure white colour, and arranged with the greatest regularity, which at once suggests the idea, that they are "too good to be true." I, myself, much prefer copying nature in colour, shape, structure,

and position; and endeavour to establish a harmony between the artificial teeth and the other physical characteristics, an unfortunate selection often proving very displeasing and objectionable. The bases on which artificial teeth are mounted are various, and include gold, platinum, dental alloy, silver, and vulcanite. No one of these bases is always the best, but each has a peculiar fitness for special cases. Gold has, however, more advantages and fewer objections than any other material, and to those who have decided to have teeth adapted, it is well to remember that "a good thing is the cheapest in the end." Common materials or bases, when used in the mouth, are often decidedly injurious to the health of the patient, and in some cases dangerous. Some few people imagine that it is wrong and presumptuous to make use of these substitutes, but they are a necessity, and "necessity has no law," moreover there is no more vanity in using them than in wearing spectacles. There is also an error which prevails very largely, and that is the practice of neglecting the mouth, and delaying the restoration of any defective teeth, and the replacing of any that are missing until all the teeth are lost. This is a great mistake, as the relative condition of the natural and artificial teeth is one of mutual advantage; the natural teeth having a tendency to steady the artificial, while they in their turn preserve and support the natural ones. If one tooth only is missing, it is a great

advantage to have it replaced, because it will tend to support the teeth on either side, and prevent them becoming displaced.

It may here be mentioned that some mouths present infinitely more difficulties than others, and may be fearlessly asserted that no dentist obtains success in *all* cases, neither does any doctor cure *all* his patients; but our endeavour is to obtain the highest percentage possible of success. With regard to the wearing of artificial teeth, much depends on the perseverance of the patient, and a little determination during the first few days is usually all that is necessary. I have, indeed, had several cases in which the patients have stated that no inconvenience has been experienced, having worn them from their first insertion for some weeks without removal; but these cases I regard as exceptional.

Chapter VIII.

On the Care of Children's Teeth, etc.

(A chapter for parents.)

Mothers may do very much towards the building up of dense and lasting teeth, as well as the general improvement of all the bony structures of their offspring, by adopting a suitable diet themselves during the periods of pregnancy and lactation. Certain of the teeth are in various stages of formation at birth, and if the mother neglects to supply herself with a suitable amount of nourishing and bone-forming material as food, nature directs the elements of nutrition into a new channel, in order to supply the wants of the growing fœtus; and thus the bony structures of the fœtus or offspring are nourished at the expense of those of the mother, *which will account for the numerous cases in which deterioration of the teeth occurs in mothers at this period.* Whether there is resorption of the earthy salts of the tooth, for the purpose of supplying the fœtus with earthy salts, is a question that is open to doubt, but there certainly seems reason for believing that the deposition of the calcareous

matter does not take place, and thus produces a condition equivalent to that in which resorption is supposed to occur. The acid condition of the mouth so often associated with pregnancy may have an injurious effect on the teeth as an agent from without, or in other words, may have a destructive influence on their external surfaces; but by far the most important cause of tooth disease at this period, is a deficiency of that nutrition which is so essential in maintaining a healthy, dense, and sound condition of the teeth, and which may be regarded as the result of increased demand without increased provision. Increased demand, by reason of the requirements of the bony structures of the offspring *in addition* to those of the mother, and these under ordinary conditions have *seemed* to be provided for by ordinary food, but which (food) has proved insufficient for the increased requirements of the pregnant condition. The impaired nutrition thus induced, and the injurious effect, of which we have evidence as regards the mother, may be reasonably supposed to affect the offspring, for notwithstanding that according to the theory suggested, viz., the nutrition of the bones of the fœtus at the expense of those of the mother, in cases where the food of the latter is deficient in bone-forming material—yet it is quite possible that in addition to the injury sustained by the bones of the parent, by reason of the direction of the elements of nutrition from them to those of

the fœtus, the earthy salts imparted to the latter may be insufficient for proper nutrition and development. Consequently, we may in some measure be able to account for the degeneration of the bony structures of the present generation, as contrasted with those of the past. The importance of the subject to which I refer, as a great social question, is my apology for introducing it to the readers of these pages, and in the few remarks made, I have endeavoured to explain as clearly as possible the necessary particulars without going into details, which would be unsuitable in a work designed for all classes of readers; and lastly, it has been placed in the section relating to children's teeth, with the presumption that it will attract the notice of parents, for whom it is intended, and be thereby the means of producing some good results. We now proceed to the consideration of the nutritive value of food, and more especially bread. Our forefathers lived principally on brown bread, porridge, milk, and cheese, and possessed teeth and bones far superior to our own. These articles of food being capable of imparting a dense and sound condition to the bones and teeth, thus enabling the teeth to better resist atmospheric changes and external influences by reason of their density. On the other hand, the bread used at the present time, which is made from fine flour deprived of the husk; together with the use of tea and coffee in the place of milk, has a direct tendency to cause

a deterioration of the bones. Wheatmeal, oatmeal, or milk, may therefore be regarded as of the highest value to those constitutions which exhibit a deterioration of the teeth, and although their regular use will be beneficial, yet they are especially necessary at those times, and in those conditions, when an unusual supply of earthy phosphates or mineral elements is demanded. If more attention were paid to this question, we should not so often hear mothers complain of neuralgia and toothache, and in many cases of the loss of one or more teeth, with every addition to the family; which shows very plainly the necessity for an increased supply of the mineral elements. While on the subject of children's teeth, I may just say that the periodical inspection of them by a dentist, especially during the shedding of the temporary and the eruption of the permanent teeth, often prevents unsightly irregularities, as well as acquired deformities in after life, arising principally from the undue persistence of the temporary teeth. At the same time I do not advise the unnecessary removal of these, as an improper interference with them may injure the permanent ones which occupy a position immediately below them.

Chapter IX.

THE HYGIENE OF THE MOUTH.

The attention necessary to ensure a healthy condition of the mouth, is amply repaid by the comfort experienced by those who possess that advantage. Besides decay, which has been more fully discussed in another section, there are other enemies of the teeth. The accumulation of abnormal deposits about the necks of the teeth, as well as the retention of food between their contiguous surfaces is a fruitful cause of loosened teeth, as well as unhealthy conditions of the gums. To avoid these evils, it is essential that any deposit of tartar be removed by the process of scaling, the frequent use of the tooth brush being sufficient to clear away any collection of food. A moderately soft brush is preferable, and if the bristles are of uneven lengths it facilitates their introduction between the teeth: this is important, as decay very often arises on their contiguous surfaces. A strand of waxed floss silk passed between teeth, which by their close proximity to each other, prevent the introduction of the bristles of the tooth brush, will also be of service. The principal object to be kept in view in

brushing the teeth, is to clear away any collection of food existing between them, or around their cusps or necks. These surfaces being peculiarly liable to retain food or other matter, and thus induce decay ; while the surfaces which are exposed to the action of the tongue, cheeks, and lips, are in some measure kept clean by their movements. It will be seen therefore that brushing the teeth *from side to side*, which is, I believe, the method adopted by most people, is very liable to cause that which is brushed off the external surfaces to collect between the teeth, and in some cases produce mischief. To avoid this, a brush of the description I suggested may be used, and the *upper* teeth brushed *downward*, and the *lower* teeth *upward*, on both the outer and inner surfaces, taking care to cleanse their masticating faces. I must confess that the old method is more easily managed, but the latter is much more effectual. With respect to the use of tooth powders, pastes, and mouth washes, they should be used with caution, as many are decidedly injurious ; some of the former containing ingredients of too gritty a character, while many of the latter contain chemicals calculated to injure the enamel. The use of honey as an ingredient in tooth pastes is decidedly objectionable by reason of its liability to ferment on the least provocation, which fermentation results in the production of free acid, and has a destructive influence on the teeth. Honey also contains a percentage of *malic*

acid, the active principle of the sour apple, the mere mention of which is sufficient to "set the teeth on edge," besides having a powerful and deleterious effect on the enamel. On the whole, the more simple the preparation used as a dentifrice the better. Pure precipitated chalk is both safe and efficient, to which may be added a little borax and a few drops of some simple perfume. Pure soap is also good and useful, a modification of which may now be obtained under the name of the O S tooth block, which is prepared with great care, and has the advantage of containing a certain proportion of impalpable tooth powder compressed into its substance by machinery, thus combining the cleansing properties of the soap with the burnishing effect of the powder.

In all unusual conditions of the teeth and gums it is well to consult a dentist, as they may require some special treatment. In order to preserve the teeth from the injurious effect of medicines containing acids or some preparations of iron, it is desirable to take them through a glass tube, and afterwards to rinse the mouth thoroughly with an alkaline solution, prepared by adding half a teaspoonful of bicarbonate of soda to a tumbler of water. In cases where a tender condition of the gums prevents the use of artificial teeth, a weak solution of alum may be used as a mouth wash.